

Name _____

STUDY GUIDE: Ecology

1. The scientific study of interactions among organisms and their environment is called _____. All of the organisms that live together, interacting with their physical environment are known as a/an _____. The part of Earth in which life exists, including land, water, and the atmosphere is called the _____.
2. Living components in the environment are called _____ factors, and include other organisms like predators, food sources, and competitors. Chemical and physical components of the environment are called _____ factors. Examples of these nonliving factors include sunlight, _____, _____, pH, _____, and soil type.
3. A/an _____ is a group of similar organisms that can breed and produce fertile offspring. A/an _____ is a group of different, interacting species that live in the same area. A/an _____ is a group of individuals of the same species that live in the same area. A group of ecosystems that share similar climates and typical organisms is called a/an _____. They are grouped _____.
4. The _____ has soil that is thin and nutrient poor, is hot and very wet, and is home to more species than all of the other biomes combined. The _____ also has thin, nutrient poor soil, but is very dry with hot days and cold nights. The _____ is also hot and has a dry season and a wet season.
5. The biome where we live that has fertile soil and deciduous and coniferous trees is the _____. The other biome with fertile soil but has lots of lush grasses is the _____. The _____ has thin soil that is perpetually frozen and has long, cold dark winters with strong winds. The _____ is also known as the taiga or boreal forest.
6. The sunlit region near the surface of aquatic ecosystems where photosynthesis can occur is called the _____ zone. The dark layer of water where sunlight does not penetrate, preventing photosynthesis, is called the _____ zone. The region where organisms live attached to or near the bottom of the water is called the _____ zone.
7. Flowing freshwater ecosystems like _____ and streams are classified as _____, while standing water ecosystems like _____ and ponds are classified as _____. Water covers the soil for at least part of the year in _____ like bogs, marshes, and swamps.
8. Explain 3 reasons wetlands are important aquatic ecosystems.
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9. Wetlands formed where a river meets the sea are called _____. They contain a mixture of _____ and _____ water, so plants living there must be salt tolerant!

10. In marine ecosystems, the _____ zone exists between low and high tide, so organisms living there must be able to survive when submerged in saltwater AND when exposed to air and sunlight. The _____ ocean makes up more than 90% of the ocean's area. The _____ ocean is brightly lit and has lots of nutrients. It is the home to many kelp forests and coral reefs.

11. Organisms that make their own food by capturing energy from sunlight or chemicals are called _____, or producers. Phototrophs produce energy from _____, while chemotrophs use _____ sources. Although most green plants are producers, some plants like the _____ are actually heterotrophs!

12. Organisms that feed on other live organisms for carbon and energy are called _____. Organisms that obtain their nutrients and energy by feeding on the remains of dead organisms are called _____. Decomposers like _____ and _____ are specialized detritus feeders that recycle nutrients.

13. Give at least 2 examples of each of the following:

- Primary consumers: _____ and _____
- Secondary consumers: _____ and _____
- Tertiary consumers: _____ and _____

14. _____ feed only on plant material. _____ feed only on other animals. _____ feed on both plants and animals. _____ feed on dead and decaying plant or animal material. Some examples of scavengers would be _____ and _____.

15. All food chains and webs must start with _____. Energy can be converted from _____ to _____ by photosynthetic organisms using the following equation:



16. Only _____% of the energy consumed by an organism is passed through each trophic level from one organism to another because some is broken down to do _____ and some is lost as _____. The total amount of living tissue within a given trophic level is called _____. There has to be more energy at the _____ of the biomass pyramid (with the producers) to support the organisms at the _____ (like the higher-level consumers).

17. Draw a food web using the following organisms: grass, fox, mouse, rabbit, coyote, mushroom

NOTE: Trace the flow of energy by including all necessary arrows and be sure that they are pointing in the correct direction.

18. Fill in the missing steps of the water cycle, in order.

- 1) Water enters the atmosphere through _____ or _____
- 2) Clouds form through _____
- 3) Water returns to Earth's surface through _____
- 4) Water flows along the surface as _____ or becomes part of the groundwater through _____
- 5) Water re-enters the atmosphere and the cycle starts over

19. During photosynthesis, plants absorb _____ and release _____. During respiration, organisms use _____ and release _____.

20. In the nitrogen cycle, bacteria absorb nitrogen gas and convert it into a more usable form through _____. Other bacteria eventually convert it back into nitrogen gas through _____. In the phosphorus cycle, phosphate is released when _____ wear down. Plants then absorb the phosphate from the soil, bond it into organic compounds, and then pass it through _____ to animals, who release it through _____.

21. Extra nutrients from fertilized fields harm surrounding aquatic ecosystems because they cause _____ to grow, which blocks _____, killing underwater plants. Bacteria then grow and use up _____ as they break down excess detritus, causing fish to suffocate and _____.

22. The range of environmental factors in which organisms can survive and reproduce is called the range of _____. The _____ range supports maximum growth, while conditions in the zones of _____ are tolerable but not optimal. If even one factor is beyond the limits of tolerance, _____ occurs.

23. The general place where an organism lives is its _____. The range of conditions in which the organism lives and the way it uses those conditions is called its _____. According to the _____ principle, no two species can occupy the same niche in the same habitat at the same time.

24. Competition between members of the SAME species is known as _____ competition, whereas competition between members of DIFFERENT species is known as _____. A behavioral characteristic to mark and defend a territory against other members of the same species is known as _____.

25. A species whose role is essential for the survival of many other species in an ecosystem is called a/an _____ species. Species _____ leads to ecosystem stability. The minimum number of individuals required to maintain a healthy population is called its _____. If the population falls below this number, _____ is common. If the population is near this number, it is considered _____, and if a population is declining rapidly, that species is considered _____.

26. Give 2 examples of keystone species and explain how they are important to the survival of other organisms in their ecosystem.

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27. Ticks, fleas, and tapeworm are examples of _____ because they take nutrients from a host. A relationship in which one species benefits and the other is neither helped nor harmed is called _____.

28. Give 2 different examples of organisms that exhibit mutualism and explain each of their roles in their relationship.

- _____ and _____
 - Explanation:

- _____ and _____
 - Explanation:

29. The change in species that occupy an ecosystem due to fires, pollution, and other natural or human disturbances is called _____. _____ succession occurs in an area in which no trace of a previous community is present, such as after volcanic eruptions or retreating glaciers. The first species to colonize such barren areas is called a/an _____ species. _____ succession occurs in areas that were only partially destroyed by disturbances such as wildfires, hurricanes, and logging. The last stage in ecological succession is known as a/an _____ ecosystem, when populations of all organisms are in balance with each other and with existing abiotic factors.

30. _____ refers to the number of individuals per unit area. Birthrate and death rate both affect population growth, as does _____, which is the movement of individuals *into* an area, and _____, which is the movement of individuals *out of* an area.

31. A J-shaped growth curve displays _____ growth, where the larger a population gets, the faster it grows. However, this type of growth cannot last forever, so the population eventually _____. An S-shaped growth curve displays _____ growth. The population stabilizes at its _____, or the maximum number of individuals of a species that can be supported by that environment.

32. _____ factors control the growth of a population and determine the carrying capacity by limiting growth and reproduction. Competition, predation, herbivory, parasitism, and disease are examples of density-_____ limiting factors, while unusual weather and natural disasters are examples of density-_____ limiting factors.

Be sure you can also

- Compare and contrast biomes
- Create and analyze population density graphs by interpreting and explaining their
 - Optimal range
 - Zones of stress
 - Range of tolerance
- Explain the trends in graphs of predator and prey populations
- Compare and contrast exponential and logistic growth curves
 - Label carrying capacity